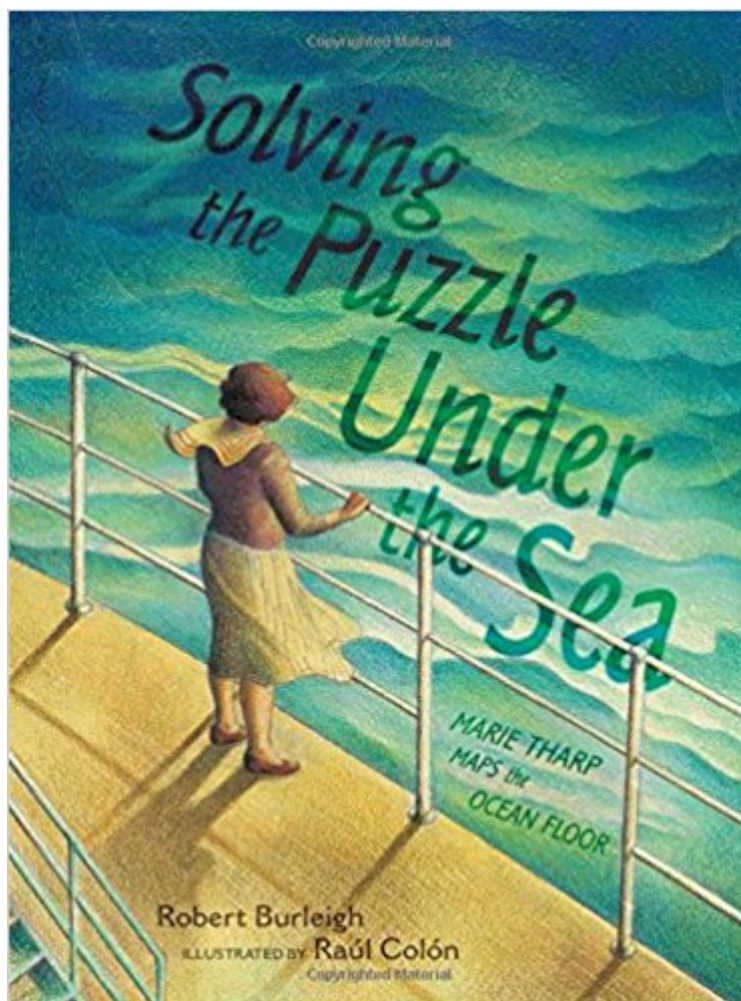


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# Solving The Puzzle Under The Sea: Marie Tharp Maps The Ocean Floor



## Synopsis

Filled with gorgeous illustrations by acclaimed artist Rafael Colón, this illustrated biography shares the story of female scientist, Marie Tharp, a pioneering woman scientist and the first person to ever successfully map the ocean floor. Marie Tharp was always fascinated by the ocean. Taught to think big by her father who was a mapmaker, Marie wanted to do something no one had ever done before: map the bottom of the Atlantic Ocean. Was it even possible? Not sure if she would succeed, Marie decided to give it a try. Throughout history, others had tried and failed to measure the depths of the oceans. Sailors lowered weighted ropes to take measurements. Even today, scientists are trying to measure the depth by using echo sounder machines to track how long it would take a sound wave sent from a ship to the sea floor to come back. But for Marie, it was like piecing together an immense jigsaw puzzle. Despite past failures and challenges—sometimes Marie would be turned away from a ship because having a woman on board was “bad luck”—Marie was determined to succeed. And she did, becoming the first person to chart the ocean floor, helping us better understand the planet we call home. Award-winning author Robert Burleigh tells her story of imagination and perseverance. Beautifully illustrated by Rafael Colón, *Look Up!* is a book that will inspire readers to follow their dreams.

## Book Information

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Age Range: 4 - 8 years

## Customer Reviews

Gr 2-4 • In this excellent biography of scientist Marie Tharp, Burleigh, writing in the first person, allows this adept geologist and oceanographic cartographer to tell her own story. Map lover Tharp became one of the 20th century's most important scientists, despite working in a field that greatly favored men. With fellow geologist Bruce Heezen, she mapped the world's oceans. Colson's signature softly hued, textured watercolors greatly enhance the text. One image depicts a research ship in the water upon which scientists took measurements called soundings to chart the ocean's depth. The writing is accessible and immediate, and though Burleigh acknowledges that Tharp was a woman working in a man's field, he casts her story in a happy light. A biographical page is appended, as well as thorough back matter. VERDICT A finely told, beautifully illustrated biography that saves a world class scientist from obscurity. • Anne Chapman Callaghan, Racine Public Library, WI

Working in a time when women were still unwelcome in her field, Marie Tharp maps the ocean floor and provides convincing evidence for the previously rejected hypothesis of continental drift. Burleigh's choice to write in Tharp's voice makes the determined geologist's story feel immediate, focusing tightly on her map that revealed the spreading Atlantic sea floor. He notes obstacles she overcame: a peripatetic childhood; gender discrimination; the superstition, still prevalent in 1948, that women were unlucky on ships; and disagreements about the drift theory even with her friend and colleague Bruce Heezen. There's a short description of Tharp's mapmaking process and a triumphant conclusion when the final, color version is published. But it's Colson's watercolor-and-pencil illustrations that bring her story alive. Readers see the map-loving child, ships taking the soundings that provided her data, the cartographer with pencil in hand, both graphing and drawing, and, in a wordless double-page spread, the exciting revelation of the rift in the middle of the Mid-Atlantic Ridge. The distinctive combed swirls of Colson's art masterfully suggest light on a seascape, and people are realistically depicted. Back matter includes more of Tharp's story, useful vocabulary, bibliography and Internet links, and even "things to wonder about and do." An ideal introduction to a lesser-known scientist and an important understanding about how the Earth works. (Informational picture book. 5-9) (Kirkus Reviews \*STARRED\* October 1, 2015) Though her discoveries were pivotal to the theory of plate tectonics, geologist and cartographer Marie Tharp is still relatively unknown. In this picture-book biography, Burleigh presents Tharp's story in

her own enthusiastic, imagined voice. “Maps. I love them!” she exclaims before describing her life and accomplishments. In a conversational tone, she discusses her curiosity, her struggles to be accepted in the boys’-club atmosphere of 1950s research labs, her dogged determination to work in science, her belief in her sea-floor-mapping project, and her satisfaction at seeing her beautiful map gracing the walls of schools and museums. Along the way, she explains depth soundings, cartographic concepts, and plate tectonics. Colored-pencil illustrations are a wonderful match for ocean scenes and frequent maps, and a few helpful diagrams further illustrate concepts... very worthwhile. Further reading and some provocative critical-thinking questions close out the volume.

• Sarah Hunter (Booklist December 1, 2015)

In this excellent biography of scientist Marie Tharp, Burleigh, writing in the first person, allows this adept geologist and oceanographic cartographer to tell her own story. Map lover Tharp became one of the 20th-century’s most important scientists, despite working in a field that greatly favored men. With fellow geologist Bruce Heezen, she mapped the world’s oceans. Colored pencil illustrations, including her signature softly hued, textured watercolors greatly enhance the text. One image depicts a research ship in the water upon which scientists took measurements called soundings to chart the ocean’s depth. The writing is accessible and immediate, and though Burleigh acknowledges that Tharp was a woman working in a man’s field, he casts her story in a happy, upbeat light. A biographical page is appended, as well as thorough back matter. VERDICT A finely told, beautifully illustrated biography that saves a world-class scientist from obscurity. (School Library Journal \*STARRED REVIEW\* December 2015)

The duo behind *Look Up!: Henrietta Leavitt, Pioneering Woman Astronomer* spotlights another groundbreaking woman scientist: Marie Tharp, the oceanographic cartographer whose mapping of the Atlantic seafloor yielded key evidence confirming the theory of continental drift. Tharp holds the narrative reins here, and her voice, as imagined by Burleigh, generally rings true. As an adolescent, she describes her passion for maps and imagines one speaking to her:

“Have an adventure. Explore. Discover something new.”

• a bold challenge for a young woman in the 1930s. Burleigh also touches on the discrimination Tharp faced. Applying for a position as a scientist, she is informed: “We don’t need any more file clerks.”

• A sexist boss won’t let her join ocean expeditions: “Having a woman on a ship is bad luck.” (No sources are provided for these quotes.)

Burleigh’s writing is clear, conversational, and lyrical on occasion. He handles the science content well; it’s never too dry or overly technical. He also portrays scientists realistically, actively engaged in and arguing about their work. Colored pencil illustrations, a textured

wash of sea- and earth tones, are thoughtful and attractive and accurately reflect the time period. A final, memorable spread shows a contemporary girl looking over her shoulder at Tharp; it's a subtle nod to Tharp's importance as a role model, as well as to the importance of other women scientists, past, present, and future. Back matter includes further biographical details, a glossary of science vocabulary, a bibliography, websites (one with a slight error), and related activities. (The Horn Book Magazine January/February 2016) Burleigh and Colman follow 2013's Look Up! with the story of another female scientist, Marie Tharp. Raised by a mapmaker, Tharp developed an early interest in exploring uncharted land; her passion eventually led her to the oceans. Burleigh gives readers an up-close view of Tharp's experiences and hunches through a first-person perspective: "Could the seafloor really be mapped? I thought so • and I wanted to give it a try!" Despite discrimination she faced as a woman, Tharp became an accomplished scientist, mapping the Atlantic using soundings and helping advance the theory of plate tectonics. Colman's warm watercolor-and-pencil art brings warmth and energy to the pages through his hatched and wavelike textures, while an afterword provides further detail about Tharp's undertaking. Ages 4–8. (Publishers Weekly December 14, 2015)

This book is exceptional in many ways. It tells the story of one of the twentieth century's great scientists, Marie Tharp. More particularly, it gives us a glimpse of her most significant scientific contribution, the mapping of the world's oceans. One might think that I'm obviously not going to give the book a bad review because Marie Tharp shares my surname, but (1) Marie Tharp didn't actually write the book, and (2) I'd be more likely to thrash a mediocre book involving my surname than play nice. The content was fascinating, especially because I'd never heard of Marie Tharp until now. Burleigh does a good job of laying out the story, providing some history of Tharp's childhood and then a chronology of her education and research, culminating in her discovery of a way to map the ocean floors. I especially like the way that Burleigh opened the story writing as Tharp in present tense and then continued in her voice to tell the story in past tense for the remainder. Raef's illustrations have a mid-twentieth-century feel to them that enhances the story and pulls readers in. Now for the not so great. I found the writing a bit troubling at times. The word choices and syntax seem appropriate for the stated age range (4–8), but some style choices made the prose stilted and unnecessarily wordy, as well as conveying secondary meanings that may not have been intended. It's in such places that Burleigh's decision to write the story from Tharp's point of view starts to unravel and risk contradicting one of the story's main themes. For

instance, in one scene Tharp seems offended that a potential employer believes she is applying for a file clerk job and only capable of performing such a job. But is that the message—that being a file clerk is a crappy job? Or should it be (in the spirit of nonbinary multioccupationalism) that she was denied equal opportunity for the job she really wanted because of sexist attitudes? I'm not suggesting how it would be rewritten, but I believe the way it was done is sloppy. Early on, Tharp graduates from college and tells us that she is now a young scientist. Then later, after she begins to make her great discovery, she notes, "I am scientist at last." No, you already were based on the earlier statement. Unless you've decided that the "bigness" of a discovery determines the "scientific-ness" of it (it doesn't—statistical validity after rigorous attempts to prove one's own hypotheses wrong determine scientific worth—a lost opportunity to share something about scientific validity with readers). And I'm not sure that calling her colleague her friend, which in some ways minimizes the importance of her position, is a great approach unless countered by a notation that white men often were credited with achievements made by women and people of color during this time in our nation's history. Her "colleague" could just as easily have been her beard (in a nonsexual way, of course—I know the analogy is reversed and out of context, but it seemed fitting). There's nothing wrong with any of this from a purely technical standpoint, but when reading the book I occasionally had "hmmm . . ." moments that set off my continuity radar. The extra biographical information, glossary, and activities at the end of the book were especially strong points. A child could spend hours researching and learning more about Marie Tharp, oceans, cartography, and science generally. And although I generally believe that writers don't need to go out of their way to create female characters for female readers (considering that most authors are females and most readers are females, that sort of happens naturally, whereas boys are the ones who never become readers at all), this is a case where it's absolutely welcome—in science. All in all, a strong if somewhat spotty book with excellent rereadability. Burleigh is at his best when speaking directly to the reader about interesting facts and activities—not so much when it comes to some of the subtleties of secondary and tertiary layering.

Bought it for grandchildren, the oldest is crazy about maps (age 7) His sister at 5 needs to learn that women can do anything. And their mother, who was a meteorologist, was the one that told her parents about plate tectonics when she was in grade school. Dad, another meteorologist, fishes with a fish finding camera. Basically it was neat for anyone on the list. Did make me wonder if she ever married? Super book!

There are too few books for girls on accomplished female scientists. Most people have no idea who Marie Tharp was and what she achieved. This book explains it well and the art is wonderful. Highly recommended.

The book was very informative.

Lovely book, which I have placed in my Little Free Library, where I try to include books about strong women in science.

Great book came on time

Good book

Summary: Marie Tharp fell in love with maps when she and her family moved from place to place for her father's job. After attending 17 different schools, she studied geography in college, then got a job at Lamont Geological Laboratory at Columbia University. Looking for a groundbreaking idea to work on, she teamed up with her colleague Bruce Heezen to map the ocean floor. For 20 years, from 1957 to 1977, Heezen collected data on many ocean trips, and Tharp turned the data into maps of the floors of the oceans. Along the way, she discovered a deep rift in the Atlantic Ocean which helped support the theory of continental drift. Her maps have been used in schools and museums around the world. End matter includes more information about Marie Tharp, a glossary and bibliography, and a page entitled, "Things to Wonder About and Do". 40 pages; grades K-4. Pros: The first person narration imbues the story with Marie's own energy and enthusiasm. Color illustrations beautifully capture the light and colors of the seas and the intricacies of Tharp's maps. Cons: The continents are moving an inch or two every year?!

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